Low-frequency variability of sea level along the coast of India

Coastal sea level is one of the better documented oceanic variables, there being several tide-gauge records of hourly sea level that stretch back to the last century. This, together with the fact that geostrophic, low-frequency coastal currents leave their signatures on sea level, makes tide-gauge data an excellent source of information for the study of coastal circulation over a vast range of sub-inertial frequencies. Low-frequency variability of sea level along the coast of India forms the subject of this thesis. “Low” is defined to exclude frequencies higher than those described by monthly sea level. The seasonal cycle is the highest frequency studied in this thesis, which examines the variability of sea level along the coast of India on seasonal through interdecadal time scales and determines the causes of the observed variability. Thesis has described the variability of sea level along the coast of India on seasonal through interdecadal time scales, mapping one end of the spectrum of sea-level variability, and has proposed hypotheses to explain the observations. There is significant variability at all these frequencies and the variability is coherent along the coast, which implies that its causes are not purely local; the low-frequency variability of sea level along the coast of India is linked to the large-scale processes in the north Indian Ocean.